Modeling Air Quality from the Global to Local Scale

May 11-15 2015

NCAR Center Green, Boulder, Colorado

Understanding the different contributions of local, regional, and global sources to air quality problems is becoming increasingly important for air quality modelers, planners, and managers. Recognizing this challenge, the Western Regional Air Partnership (WRAP), the U.S. EPA, the National Center for Atmospheric Research (NCAR), and the LRTAP Convention's Task Force on Hemispheric Transport of Air Pollution (TF HTAP) are organizing two coordinated workshops which will address current challenges in air quality modeling across the global to local spectrum:

- **HTAP2 Global and Regional Model Evaluation Workshop, 11-13 May** (see www.htap.org)
  May 11-12 will focus on reviewing the global and regional modeling results from the HTAP2 multi-model experiments. These experiments have been organized by TF HTAP to improve our understanding of the influence of global and intercontinental transport of air pollutants across the Northern Hemisphere on local and regional air quality. The 2008-2010 base simulations for these experiments will be compared to various types of observations from around the world, including but not limited to intensive observations in the Western United States. The conclusions of these sessions and insights for the Western United States will be summarized on May 13 as part of joint sessions with the Western Air Quality Modeling Workshop, creating a bridge between global scale and regional scale analyses.

- **2015 Western Air Quality Modeling Workshop, 13-15 May (**see WRAP calendar posting)
  Beginning on Wednesday (May 13) and continuing into Thursday and Friday (May 14 and 15), the meeting will focus on air quality modeling to address specific issues in the Western United States, including ozone (O_3), particulate matter (PM), visibility, and deposition. The goal of this workshop is to identify and address air quality management needs specific to regulating agencies in the Western U.S. to provide a credible air quality modeling platform for multiple uses. Applications include attainment of National Ambient Air Quality Standards, Regional Haze Rule planning, Prevention of Significant Deterioration permitting, and Exceptional Events demonstrations. Topics will include: non-U.S. anthropogenic air quality impacts; wintertime elevated O_3; wintertime elevated $PM_{2.5}$; emission inventories for critical sectors, such as upstream and midstream oil & gas operations, wild land and agricultural fires, and residential biomass fuel combustion; and spring and summer season O_3. This meeting builds upon the 2011 and 2013 Western States Air Quality Modeling Workshops and the 2012 WESTAR Western Ozone Transport Conference. These meetings were attended by technical air quality planning and modeling staff from Western state and local agencies, tribal representatives, U.S. Environmental Protection Agency, federal land managers, consultants, industry, and researchers from NOAA, NASA, NCAR, and academic institutions.

Advance registration is required by May 1, 2015. Registration and logistical information are available at: http://www.htap.org/meetings/2015/2015_May_11-15/meeting.htm. For those not be able to attend in-person, registered individuals will be able to participate remotely via web conferencing. For more information, please contact Terry Keating (TF HTAP, keating.terry@epa.gov) or Tom Moore (WESTAR/WRAP, tmoore@westar.org).

Hotel room block on-line reservations are available via a personalized program reservations page: WRAP-EPA Western Modeling Workshop. Please see the WRAP calendar posting for additional information.

2015 Western Air Quality Modeling Workshop

Wednesday, May 13, 2015 (*morning includes joint sessions with HTAP2 workshop)

Ozone and PM Air Quality in the Western U.S.: Overview (Moderator: P. Dolwick)

08:00 National air quality program management challenges related to CAA planning (R. Wayland, EPA OAQPS)
08:15 Overview of current O3 AQ and recent AQ/emissions trends in the WUS (T. Moore, WESTAR/WRAP)
08:30 2014 DISCOVER-AQ and FRAPPE field campaigns - Science Team report (invited)
09:00 Update on trends in background ozone concentrations (invited)
09:15 Messages from the March 31- April 2 Transboundary Ozone Pollution Conference (L. Avey, Utah)
09:30 Discussion

09:45 Break

Ozone Air Quality in the Western U.S. / Role of international sources (Moderator: T. Keating)

10:00 Overview of HTAP2
10:20 Global model results and evaluation
10:40 Regional model results and evaluation from AQMEII3 and MICS3
11:00 Summary of North American inflow analysis
11:20 Future global scenarios [include estimated future year values?]
11:40 Discussion

Noon Lunch

Ozone Air Quality in the Western U.S. / Role of natural sources (Moderator: P. Dolwick)

01:00 Recent case study of stratospheric ozone intrusion in the WUS (P. Reddy, CDPHE)
01:20 Results from Las Vegas Ozone Study (A. Langford, NOAA ESRL)
01:40 Tropospheric Ozone Lidar Network (TOLNET) research program update (C. Senff, NOAA)
02:00 Real-time depiction of stratospheric intrusions in RAQMS/WRF-Chem (B. Pierce, NOAA)
02:20 Controls on O3 and SOA production in wildfires plumes and thoughts on parameterization for gridded models. (D. Jaffe, Univ. of Washington)
02:40 Discussion

03:00 Break

Ozone Air Quality in the Western U.S. / Modeling background contributions (Moderator: P. Dolwick)

03:20 Use of statistical models to support exceptional event designations and help interpret Eulerian models (D. Jaffe, Univ. of Washington)
03:40 Comparisons of recent background ozone estimates in the WUS (invited)
04:00 Initial results from 3-State AQ modeling study related to O3 background (Z. Adelman, UNC)

04:20 Modeling estimates of emissions-influenced background ozone and its relationship to trends in the western United States (A. Lefohn – ASL & Associates)
04:40 Model estimates of U.S. background (U.S. boundary condition inflow) ozone (P. Dolwick & J. Kelly, EPA OAQPS)
05:00 Identification of outstanding technical issues associated with background ozone (G. Tonnesen, EPA Region 8)

05:30 Adjourn

Thursday, May 14, 2015

Western States air quality regulatory drivers: design values, nonattainment, exceptional events, regional haze, & NEPA (Moderator: K. Baker)

08:00 Overview of western States air quality issues (K. Baker, US EPA OAQPS)
08:15 California regulatory drivers and analysis work to support planning (C. Bohnenkamp, EPA Region 9 and CARB [invited])
08:30 Impact of wildfires on air quality along the Wasatch Front (J. Lin, Univ. of Utah)
08:50 Ozone and fire – analysis tools for exceptional events and planning (M. Mavko, Air Sciences)
09:10 FIREX 2018 field campaign (C. Warneke, NOAA)
09:30 Discussion

09:45 Break

10:00 State perspective on monitoring networks and modeling tools for air quality planning (G. Pierce, Colorado APCD)
10:20 NEPA photochemical modeling needs & NO2 drill rig study (M. Uhl, BLM)
10:40 US EPA modeling to support current PM NAAQS review (J. Kelly, EPA OAQPS)
11:00 Status of western regional (3-State, NW-Airquest, others?) air quality studies; modeling and monitoring components (T. Moore, WESTAR/WRAP)
11:20 NASA AQAST program support for western US air quality management (T. Holloway, Univ. of Wisconsin)
11:40 Discussion

12:00 Lunch

Oil & Gas emissions inventory and modeling: Inventory comparisons; Top down vs. bottom up inventory assessments, Activity data, emissions factors, control efficiency; Oil & gas emissions "tool" overview and update; VOC speciation; Projections (Moderator: T. Moore)

01:00 Reducing uncertainty and increasing representativeness of upstream O&G emissions in the western US (T. Moore, WESTAR/WRAP)
01:15 Implementation of EPA Methane strategy for O&G sector and implications for better characterizing methane in modeling systems (invited)
01:30 2011 CAP/HAP National Emission Inventory development & 2014 NEI plans for the oil & gas exploration sector (J. Snyder, EPA OAQPS)
01:50 Emissions inventory and modeling issues for O&G sector: VOC speciation, spatial allocation, stack parameters, temporal allocation (Z. Adelman, UNC & A. Zubrow, EPA OAQPS)
02:10 Using Growth and Decline Factors to Project VOC Emissions from Oil and Gas Production (W. Oswald, Utah)

02:30 Characterizing oil and natural gas field emissions using top-down approaches in the Uintah and Denver-Julesburg basins (R. Ahmadov and S. McKeen, NOAA)

02:50 Break

Winter ozone photochemical observation and model based studies (moderator: G. Tonnesen)

03:00 Historical trends in ambient data and model application for the UGRB (D. Potter, Wyoming)
03:20 Review of key findings from 2012, 2013, and 2014 Uintah basin field studies (J. Roberts, NOAA)
03:40 SONGNEX 2015 field campaign goals and outcomes (J. de Gouw, NOAA)
04:00 Bakken field study (J. Collett, CSU or A. Prenni, NPS)
04:20 CDPHE tracer studies: preliminary well pad measurements & project overview (invited)
04:40 CMAQ sensitivity to Uintah Basin oil and gas emissions inventory updates (L. Avey, Utah)
05:00 Wintertime ozone chemistry and photolysis updates for CAMx (C. Emery, ENVIRON)

05:20 POSTER SESSION

06:30 Adjourn

Friday, May 15, 2015

Winter PM2.5 photochemical model applications, observation based studies, and key emissions sectors: SJV - Discover AQ 2013; Salt Lake City; Fairbanks; Others? (Yakima, residential wood combustion areas); Improved NH3 emissions estimates; agricultural operation emissions inventory and emissions modeling; Wood smoke emissions inventory, modeling, and use in AQ models (Moderator: K. Baker)

08:00 Overview of areas with winter time stagnation & EPA modeling of winter PM2.5 in San Joaquin Valley for the 2013 DISCOVER-AQ period (K. Baker, EPA OAQPS)
08:20 EPA/CARB model performance comparison using CALNEX (J. Kelly, EPA OAQPS)
08:40 Numerical Modeling of Wintertime Cold Air Pools in the Uintah and Salt Lake Basin (E. Crosman, Univ. of Utah)
09:00 3-State Study WRF configuration for winter ozone modeling under western stagnation conditions (Z. Adelman, UNC)
09:20 Residential wood emission inventory development and contribution modeling (R. Mason & K. Baker, EPA OAQPS)
09:40 Discussion

10:00 Break

Regulatory air quality modeling updates and overview (Moderator T. Moore)

10:30 Denver ozone modeling for NAAQS attainment (R. Morris, ENVIRON)
11:00 Rapid updates on technical work from States, Federal agencies, and other stakeholders
11:30 Concluding remarks and follow-up items from this workshop: Needs assessment for western States air quality (T. Moore, WESTAR/WRAP)

Adjourn (Noon)